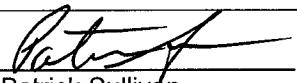


## EENS Job Risk Assessment

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<b>Name(s) of Risk Team Members:</b> B. Dong, J. Johnson, S. Springston, J. Nagy, L. Bowerman, B. Bowerman, W. Litzke, D Mahajan, P. Carr, A. Piper, J. Boccio	<b>Point Value → Parameter ↓</b>	1	2	3	4	5
<b>Job Title:</b> Compressed Gas Work <b>JRA #:</b> EENS-JRA-001 <b>Rev. #:</b> 1 <b>Date:</b> 8/16/07	<b>Frequency (B)</b>	≤once/year	≤once/month	≤once/week	≤once/shift	>once/shift
<b>Job Description:</b> Work with compressed gas cylinders and systems, including flammable & toxic/hazardous gases, and fuel-gas soldering and welding systems.	<b>Severity (C)</b>	First Aid Only	Medical Treatment	Lost Time	Partial Disability	Death or Permanent Disability
<b>Training and Procedure List (Optional)</b> Compressed Gas Subject Area, Work Planning & Control Documents	<b>Likelihood (D)</b>	Extremely Unlikely	Unlikely	Possible	Probable	Multiple
<b>Approved by:</b>  Date: 8/21/07 Patrick Sullivan						
<b>Stressors (if applicable, please list all):</b> Weather conditions adversely affecting storage facility conditions		<b>Reason for Revision (if applicable):</b>			<b>Comments:</b>	

				Before Additional Controls							After Additional Controls					
Job Step / Task	Hazard	Control(s)	Stressors Y/N	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	Control(s) Added to Reduce Risk	Stressors Y/N	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	% Risk Reduction
Storage of gas cylinders	Being struck by object due to pressure release	Storage area conditions, good housekeeping practices, OSHA compliance, cylinders capped and secured, Tier I	Y	1	3	4	2	24								
	Exposure to highly toxic gases	CMS, proper storage, training, vented cabinets/areas & monitoring, as appropriate, posting, Tier I	Y	1	3	5	2	30								
	Explosion or fire due to ignition of gas	Storage area conditions, good housekeeping practices, equipment inspection, separation of fuel and oxidizer cylinders, OSHA compliance, cylinders capped & secured, postings, training	Y	1	3	4	2	24								
	ODH	Posting, Tier I, training, ODH Review	Y	1	3	5	2	30								

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Job Step / Task	Hazard	Control(s)	Stressors Y/N	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	Control(s) Added to Reduce Risk	Stressors Y/N	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	% Risk Reduction	
Transporting cylinders to/from storage/use area	Overexertion injuries caused by excessive lifting, pushing, pulling, holding, carrying	Wheeled gas carts, training, cylinders capped and secured	Y	1	2	3	3	18									
	Being struck by object due to pressure release from failure of equipment	Equipment inspection, training, cylinders capped and secured	N	1	2	4	1	8									
Moving cylinders to different floor level in elevators	Being struck by object due to pressure release from failing of cylinder, or inhalation exposure	Wheeled gas carts with cylinders capped and secured; no personnel in elevator compartment during floor changes, training	N	1	2	3	1	6									
Removing Cap	Valve failure due to improper cap removal when cap is stuck	Training, proper tool for job (strap wrench), removal of cylinder from service, safety glasses	N	1	2	4	1	8									
Attaching regulator to cylinder	Being struck by object due to pressure release; gas release	Use of proper regulator, equipment inspection, safety glasses, training, cylinders secured, use of proper tool to open valve	N	1	2	4	1	8									
Connecting regulated cylinder to system	Being struck by object due to pressure release, break valve	Use of proper regulator/cylinder, equipment inspection, training, system design/review, isolation valves, OSHA compliance, cylinders secured, safety glasses	N	1	2	4	1	8									
	Explosion due to improper regulator (e.g., oiled regulator on oxygen cylinder)	Use of proper regulator, no use of adapters, training, Tier I	N	1	2	4	1	8									

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Job Step / Task	Hazard	Control(s)	Stressors Y/N	Before Additional Controls					Control(s) Added to Reduce Risk	Stressors Y/N	After Additional Controls					% Risk Reduction
				# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD			# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	
Use of compressed gases	Being struck by object due to pressure release	Equipment inspection, training, system design/review, safety glasses, OSHA compliance, cylinders secured	N	1	3	3	1	9								
	Contaminated or mislabeled cylinder	User check for signs of cylinder content error; QA specifications as appropriate	N	1	3	4	1	12								
	Oxygen deficiency	System design/review, ventilation, ODH review, Tier I, training, monitoring as appropriate, posting	N	1	3	5	1	15								
	Poisoning or lung damage due to inhalation of toxic gas	System design/review, MSDS, training, ventilation/area monitoring, as appropriate, Tier I, posting	N	1	3	5	1	15								
	Explosion of glass vessels used under pressure in experimental set-ups	Training, proper use of regulators, system design/review, safety glasses, secondary containment (>2 cc vol or 1/16" diam.), barriers	N	1	3	4	1	12								
Use of flammable or oxidizing gas	Explosion or fire due to ignition of gas; failure of flexible lines	System design/review, posting, MSDS, ventilation, as appropriate, Tier I, OSHA compliance, cylinders secured, removal of heat or spark sources, training	N	1	3	4	1	12								
	Contaminated or mislabeled cylinder causing fire or explosion	User check for signs of cylinder content error; QA specifications as appropriate, training	N	1	3	4	1	12								
	Explosion or fire due to reaction of gas with surroundings	System design/review, MSDS, ventilation, Tier I, OSHA compliance, segregation of materials, training	N	1	3	4	1	12								

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								Before Additional Controls								After Additional Controls				
Job Step / Task	Hazard	Control(s)	Stressors Y/N	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	Control(s) Added to Reduce Risk	Stressors Y/N	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	% Risk Reduc- tion				
Use of fuel-gas system for sol- dering, welding or other opera- tion	Explosion due to im- proper gas mixture	Training, permits, OSHA compliance, MSDS, proper nozzles and ignition de- vices, ventilation, as appropriate	N	1	2	4	1	8												
	Explosion or fire due to leaking hoses, nozzles or valves	Equipment inspections, Tier I, training, OSHA compliance; segregation when not in use, permits	N	1	2	4	1	8												
	Fire due to ignition of sur- rounding materials or clothing	Area inspections and preparation, Tier I, training, permits, fire watch, if appropriate	N	1	2	3	2	12												
	Contact with heated ob- jects resulting in burns	Work area conditions, Tier I, permits, train- ing, gloves, proper tools or tongs	N	1	2	1	3	6												
	Personnel injury from welding	Welding helmet or other body & proper eye protection, training, OSHA compliance, permits as req'd.	N	1	2	4	2	16												
Disconnecting gas supply from system	Being struck by object due to pressure release, exposure	Equipment inspection, training, system de- sign/review, isolation valves, safety glasses, OSHA compliance, cylinders se- cured	N	1	2	4	1	8												
Removing regu- lator from cylin- der	Being struck by object due to pressure release	Equipment inspection, training, safety glasses, OSHA compliance, cylinders se- cured	N	1	2	4	1	8												
Further Description of Controls Added to Reduce Risk:																				
*Risk:	0 to 20 Negligible	21 to 40 Acceptable	41 to 60 Moderate				61 to 80 Substantial				81 or greater Intolerable									

Changes, Rev 1 (Review Team: P. Carr, L. Bowerman, W. Brown, P. Philipsberg, R. Webster)

Editorial changes - Tasks 1 & 2 "Storage & Transporting cylinders" clarified; "Storage in use task" deleted

Controls clarified - Tasks 1, 2, 4, 5, 6, 7, 8, 9, 10, and 11. Frequency & risk changed - Tasks 5, 7, 8, 9, and 11)